

In the Claims

1. An upright vacuum cleaner, comprising:
  - a nozzle assembly;
  - a canister assembly pivotally mounted to said nozzle assembly;
  - 5 a suction fan and motor carried on one of said nozzle assembly and said canister assembly; and
  - a biaser having a first end engaging said nozzle assembly and a second end engaging said canister assembly so as to provide a positive downforce urging a forward end of said nozzle assembly
  - 10 toward a surface to be cleaned.
2. The upright vacuum cleaner of claim 1, wherein said biaser is a spring.
3. The upright vacuum cleaner of claim 1, wherein said biaser is a torsion spring.

4. The upright vacuum cleaner of claim 1, wherein said nozzle assembly includes a hollow stub shaft received within a groove in said canister assembly, said stub shaft cooperating with said groove to define an axis for pivoting movement of said canister assembly with respect to said nozzle assembly.

5. The upright vacuum cleaner of claim 4, wherein at least a portion of said spring is received in said hollow stub shaft.

6. The upright vacuum cleaner of claim 5, wherein said canister assembly includes a channel adjacent said groove and said second end of said spring is elongated and is received in said channel.

7. The upright vacuum cleaner of claim 6, wherein said channel is formed by a box rib on a wall of said canister assembly.

8. The upright vacuum cleaner of claim 6, wherein said hollow stub shaft includes a slot through which said second end extends into said channel.

9. The upright vacuum cleaner of claim 1, wherein said biaser provides between about 1.2 and about 3.2 lbs/sq. in. of preload.

10. The upright vacuum cleaner of claim 1, wherein said biaser provides between about 2.0 and about 2.4 lbs/sq. in. of preload.

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11. The upright vacuum cleaner of claim 1, wherein said biaser provides between about 0.2 and 3.0 lbs/sq. in. of downforce on a forward end of said nozzle assembly.

12. The upright vacuum cleaner of claim 1, wherein said biaser provides a downforce of between about 0.8 and about 1.6 lbs/sq. in. on a forward end of said nozzle assembly when said canister assembly is positioned at about a 135° included working angle with respect to said nozzle assembly.

13. The upright vacuum cleaner of claim 1, wherein said biaser provides a downforce of about 1.2 lbs/sq. in. on a forward end of said nozzle assembly when said canister assembly is positioned at about a 135° included working angle with respect to said nozzle assembly.

14. An upright vacuum cleaner, comprising:  
     a nozzle assembly;  
     a canister assembly pivotally mounted to said nozzle assembly;  
     a suction fan and motor carried on one of said nozzle assembly and said canister assembly; and  
     means for biasing a forward end of said nozzle assembly toward a surface to be cleaned.

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16. The upright vacuum cleaner of claim 14, wherein said biaser is a torsion spring.

18. The upright vacuum cleaner of claim 17, wherein at least a portion of said spring is received in said hollow stub shaft.

20. The upright vacuum cleaner of claim 19, wherein said channel is formed by a box rib on a wall of said canister assembly.

21. The upright vacuum cleaner of claim 19, wherein said hollow stub shaft includes a slot through which said second end extends into said channel.

22. The upright vacuum cleaner of claim 14, wherein said biaser provides between about 1.2 and about 3.2 lbs/sq. in. of preload.

23. The upright vacuum cleaner of claim 14, wherein said biaser provides between about 2.0 and about 2.4 lbs/sq. in. of preload.

24. The upright vacuum cleaner of claim 14, wherein said biaser provides between about 0.2 and 3.0 lbs/sq. in. of downforce on a forward end of said nozzle assembly.

25. The upright vacuum cleaner of claim 14, wherein said biaser provides a downforce of between about 0.8 and about 1.6 lbs/sq. in. on a forward end of said nozzle assembly when said canister assembly is positioned at about a 135° included working angle with respect to said nozzle assembly.

26. The upright vacuum cleaner of claim 14, wherein said biaser provides a downforce of about 1.2 lbs/sq. in. on a forward end of said nozzle assembly when said canister assembly is positioned at about a 135° included working angle with respect to said nozzle assembly.

27. A method for increasing the cleaning efficiency of a vacuum cleaner, comprising:

providing a downforce on a nozzle assembly of the

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vacuum cleaner to urge said nozzle assembly toward a floor being cleaned;

28. A method of reducing vibration in a vacuum cleaner including a nozzle assembly and a canister assembly, comprising:
- providing a biasing force between said nozzle assembly and said canister assembly to dampen vibration.